



## Senate

General Assembly

**File No. 530**

February Session, 2006

Substitute Senate Bill No. 408

*Senate, April 18, 2006*

The Committee on Appropriations reported through SEN. HARP of the 10th Dist., Chairperson of the Committee on the part of the Senate, that the substitute bill ought to pass.

### **AN ACT CONCERNING THE ADVANCEMENT OF NANOTECHNOLOGY DEVELOPMENT IN CONNECTICUT.**

Be it enacted by the Senate and House of Representatives in General Assembly convened:

1 Section 1. Section 4-124hh of the 2006 supplement to the general  
2 statutes is repealed and the following is substituted in lieu thereof  
3 (*Effective July 1, 2006*):

4 (a) The Office of Workforce Competitiveness shall, within available  
5 appropriations, establish a grant program to provide a flexible source  
6 of funding the creation and generation of talent in institutions of  
7 higher education and, with appropriate connections to vocational-  
8 technical schools and other secondary schools, for student outreach  
9 and development. Grants pursuant to this subsection shall be awarded  
10 to institutions of higher education and may be used to:

11 (1) Upgrade instructional laboratories to meet specific industry-  
12 standard laboratory and instrumentation skill requirements;

13 (2) Develop new curriculum and certificate and degree programs at  
14 the level of associate, bachelor, master's and doctorate, tied to industry  
15 identified needs;

16 (3) Develop seamlessly articulated career development programs in  
17 workforce shortage areas forecasted pursuant to subdivision (9) of  
18 subsection (b) of section 4-124w in collaboration with vocational-  
19 technical schools and other secondary schools and institutions of  
20 higher education; [and]

21 (4) Support undergraduate and graduate student research projects  
22 and experimental learning activities; and

23 (5) Establish a nanotechnology post-secondary education program  
24 and clearinghouse for curriculum development, scholarships and  
25 student outreach.

26 (b) The Office of Workforce Competitiveness shall, within available  
27 appropriations, establish a grant program to provide funding for the  
28 advancement of research capabilities and research opportunities.  
29 Grants pursuant to this subsection shall be awarded to institutions of  
30 higher education and technology focused organizations and may be  
31 used to:

32 (1) Recruit eminent faculty in basic and applied research;

33 (2) Leverage federal funding for research centers; [and]

34 (3) Provide pilot funding for faculty to develop initial research data  
35 for the development of larger grant funding proposals and to nonstate  
36 granting entities, such as federal agencies; and

37 (4) Establish a Connecticut Nanotechnology Collaboration Initiative  
38 to foster industry-university relationships by providing:

39 (A) Discovery grants, not to exceed fifty thousand dollars, to  
40 support post-doctorate or graduate students working with industry on  
41 nanotechnology projects under the supervision of faculty members.

42 Each discovery grant shall be matched with a direct or in-kind  
43 industry grant in the same amount;

44 (B) Collaborative grants, not to exceed one hundred fifty thousand  
45 dollars, to support university research teams working with industry on  
46 collaborative research projects focused on specific application  
47 development. Each collaborative grant shall be matched with an  
48 industry grant in the same amount;

49 (C) Prototype grants, not to exceed two hundred fifty thousand  
50 dollars, to enable universities and companies to demonstrate whether  
51 a prototype is manufacturable and functional and the cost effectiveness  
52 of nanotechnology-related applications. Each prototype grant shall be  
53 matched with an industry grant in an amount equal to two dollars for  
54 every one dollar of such prototype grant.

55 (c) The Office of Workforce Competitiveness shall, within available  
56 appropriations, establish a grant program to provide funding for the  
57 promotion of collaborative research applications between industry and  
58 institutions of higher education. Grants pursuant to this subsection  
59 shall be awarded to institutions of higher education, technology-  
60 focused organizations and business entities may be used:

61 (1) To improve technology infrastructure by advancing the  
62 development of shared use between institutions of higher education  
63 and business entities of laboratories and equipment, including, but not  
64 limited to, technology purchase, lease and installation, operating and  
65 necessary support personnel and maintenance; [and]

66 (2) As matching grants for joint projects between an industry, a  
67 technology-focused organization or a university. The office shall  
68 structure the matching grants to provide two rounds of funding  
69 annually and shall do outreach to companies. The matching grant part  
70 of the program shall include, but not be limited to, (A) one-to-one  
71 matching grants not to exceed one hundred thousand dollars, with in-  
72 kind match allowed for small and mid-sized companies, (B)  
73 involvement of a competitive process with outside reviewers using as

74 key criteria (i) the demonstration of commercial relevance, and (ii) a  
75 clear path to the marketplace for any innovations developed in the  
76 course of the research, and (C) an aggressive marketing campaign  
77 through business organizations to raise industry awareness of  
78 resources from universities or technology-focused organizations; and

79 (3) To develop a Connecticut Center for Nanoscale Sciences and  
80 Development to provide a shared-use laboratory in one or more sites  
81 in the state to advance university research, industry application  
82 development and education involving the synthesis, characterization  
83 and fabrication of nanoscale materials, intermediates and devices and  
84 related program activities. The Office of Workforce Competitiveness  
85 shall conduct a feasibility study and business planning model leading  
86 to the establishment of such center, including strategies for securing  
87 investments from the federal government and private entities. On or  
88 before January 1, 2007, said office shall submit the results of such  
89 study, in accordance with the provisions of section 11-4a, to the joint  
90 standing committees of the General Assembly having cognizance of  
91 matters relating to commerce and higher education and employment  
92 advancement.

93 (d) The Office of Workforce Competitiveness shall, within available  
94 appropriations, establish a grant program to provide funding for the  
95 promotion of commercialization of research done by institutions of  
96 higher education. Grants pursuant to this subsection shall be awarded  
97 to institutions of higher education and business entities and may be  
98 used; [to:]

99 (1) [Provide] To provide funding to verify the technical and  
100 commercial feasibility of early stage discoveries by institutions of  
101 higher education that are disclosed or patented to accelerate and  
102 increase the likelihood that the technology will be successfully  
103 commercialized; [and]

104 (2) [Provide] To provide matching support for smaller institutions  
105 of higher education to allow for contracts with independent  
106 technology transfer organizations to provide specific service to support

107 specific needs; and

108 (3) Through the Connecticut Small Business Innovation Research  
109 Office, supported by the Office of Workforce Competitiveness, to  
110 provide specialized technical assistance to advance nanotechnology  
111 awards to Connecticut companies and the small business innovation  
112 research program, including nanotechnology-related workshops and  
113 seminars, grant preparation assistance, marketing assistance, services  
114 related to matching grants and other technical assistance to assist  
115 companies with nanotechnology-related applications for the small  
116 business innovation research program.

This act shall take effect as follows and shall amend the following sections:		
Section 1	July 1, 2006	4-124hh

**HED**

*Joint Favorable C/R*

APP

**APP**

*Joint Favorable Subst.*

The following fiscal impact statement and bill analysis are prepared for the benefit of members of the General Assembly, solely for the purpose of information, summarization, and explanation, and do not represent the intent of the General Assembly or either House thereof for any purpose:

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### **OFA Fiscal Note**

#### **State Impact:**

Agency Affected	Fund-Effect
Workforce Competitiveness, Off.	GF - See Below

Note: GF=General Fund

**Municipal Impact:** None

#### **Explanation**

The bill authorizes the Office of Workforce Competitiveness (OWC), within available appropriations, to establish a Connecticut Nanotechnology Collaboration Initiative to foster industry-university relationships by providing matching discovery, collaborative, and prototype grants. With passage of the bill, OWC would either (1) re-allocate existing funding for this purpose from another program; (2) incur additional costs; or (3) not implement this program due to lack of funding.

OWC shall develop a Connecticut Center for Nanoscale Sciences and Development to advance university research and education involving the fabrication of nanoscale materials. OWC shall conduct a feasibility study and business planning model leading to the establishment of such center and present its findings to the Higher Education committee by January 1, 2007. The Small Business Innovation Research Office shall provide technical assistance to assist companies with nanotechnology-related applications.

#### **The Out Years**

The annualized ongoing fiscal impact identified above would continue into the future subject to inflation.

**OLR Bill Analysis****sSB 408****AN ACT CONCERNING THE ADVANCEMENT OF  
NANOTECHNOLOGY DEVELOPMENT IN CONNECTICUT.****SUMMARY:**

This bill adds various nanotechnology development initiatives to the grant programs PA 05-198 required the Office of Workforce Competitiveness (OWC) to establish to promote research collaborations between academia and industry. It provides for matching grants to support students working on nanotechnology projects and university teams working with businesses to apply research and create product prototypes. All grants must be provided within available appropriations.

The bill also calls for OWC to study the feasibility of developing a center for nanoscale sciences and development. And it requires OWC to provide technical assistance to help businesses apply for nanotechnology-related Small Business Innovation Research funds.

EFFECTIVE DATE: July 1, 2006

**NANOTECHNOLOGY PROMOTION GRANTS*****University-Business Collaboration Grants***

As part of OWC's research funding grant program, the bill establishes three types of grants to promote collaboration on nanotechnology projects. The grants can go to colleges, universities, and technology-focused organizations.

1. Discovery grants, up to \$50,000, support graduate or post-doctoral students working with industry under the supervision of faculty. The grants must be matched equally by money or in-

kind services from business.

2. Collaborative grants, up to \$150,000, support university research teams collaborating with industry on research focused on specific application development. These grants must be matched equally by industry funds.
3. Prototype grants, up to \$250,000, enable universities and businesses to demonstrate (a) whether a prototype is functional and can be manufactured and (b) the cost-effectiveness of the nanotechnology application. Industry must match each state dollar with two dollars.

### ***Nanoscale Sciences and Development Center***

As part of OWC's grant program to promote collaborative research applications between industry and academia, the bill authorizes grants to colleges and universities, technology-focused organizations, and businesses to develop a Connecticut Center for Nanoscale Sciences and Development. The center is to provide (1) a shared-use laboratory to advance academic research, industry application development, and education involving the synthesis, characterization, and fabrication of nanoscale materials, intermediates, and devices and (2) related activities. The laboratory may be located in a single or multiple sites.

The bill requires OWC to conduct a feasibility study and business planning model leading to the center's creation. The study must include strategies for obtaining investments from federal and private sources. OWC must report its findings to the Higher Education Committee by January 1, 2007.

### ***Small Business Innovation Research (SBIR) Assistance***

As part of OWC's grant program to promote commercialization of academic research, the bill authorizes grants to colleges, universities, and businesses to provide specialized technical assistance to advance nanotechnology awards to businesses and the Small Business Innovation Research Program. The grants go through the state's Small Business Innovation Research Office, which is operated by the



Connecticut Center for Advanced Technology. The technical assistance can include workshops, seminars, grant preparation and marketing help, services related to matching grants, and other assistance to help business make nanotechnology-related applications for SBIR funds.

***Education Grants***

The bill authorizes OWC to make grants to higher education institutions to establish a nanotechnology post-secondary education program and clearinghouse for curriculum development, scholarships, and student outreach.

***Grant Priorities***

The law requires OWC to use the following priority order in awarding its existing grants and the ones the bill establishes. Grants that:

1. focus on key technology areas to give Connecticut a competitive advantage in the knowledge economy;
2. create certificate and degree programs to encourage talent generation;
3. promote collaboration between public and private colleges and universities;
4. involve multiple activities, enhance research capabilities, promote applied research collaboration, and find commercial uses for academic research; and
5. match funds from businesses, technology-focused organizations, or colleges and universities.

**BACKGROUND*****Nanotechnology***

Nanotechnology is cross-disciplinary science that combines chemistry and engineering to manipulate individual atoms and

molecules to produce a desired structure. It can be applied to organic and inorganic matter. Nanotechnology is potentially applicable to material, manufacturing processes, alternate energy production, electronics, and health care products and processes.

**SBIR**

SBIR is a federally funded program to assist small, technology-based business research, develop, and commercialize new products. The program has two phases. Phase one provides up to \$100,000 for a small business to determine the feasibility of an innovative technology. Phase two provides up to \$750,000 for prototype development.

**COMMITTEE ACTION**

Higher Education and Employment Advancement Committee

Joint Favorable Change of Reference

Yea    20    Nay   0    (03/14/2006)

Appropriations Committee

Joint Favorable Substitute

Yea    49    Nay   0    (04/04/2006)